

Claims 1-41 (Cancelled)

42. (Previously presented) A method of forming an ingestible product containing an active ingredient, the method comprising supplying a liquid containing an active ingredient to an outlet and subjecting the liquid to an electric field to cause formation of electrically charged particles of a bioresorbable or biodegradable polymer carrying the active ingredient whereby, when the particles are ingested, the polymer is degraded by chemical or enzymic attack to enable release of the active ingredient.
43. (Previously presented) A method of forming at least partially solid material, the method comprising:
- supplying liquid to an outlet;
 - applying a voltage to subject liquid at the outlet to an electric field to cause the liquid to form at least one jet of electrically charged liquid; and
 - pulsing the applied voltage to cause the jet to break up to form fiber fragments.
44. (Previously presented) A hand holdable wound care device that enables a user to apply a dressing onto a wound surface, comprising a housing adapted to be held in a user's hand, the housing outlet, the housing containing:
- a reservoir containing liquid and having a reservoir outlet;
 - a liquid supply tube configured to receive liquid from the reservoir outlet and having a supply tube outlet registering with the housing outlet;
 - a pump for pumping liquid from the reservoir along the liquid supply tube to the supply tube outlet and through the housing outlet;
 - a voltage source for supplying a voltage; and

user operable switch means adapted to be activated manually by the user, the housing outlet being directable by the user towards the wound surface so as to couple the voltage supplied by the voltage source to the supply tube outlet to generate an electric field to cause the liquid to form at the housing outlet at least one electrically charged jet, the jet forming a fiber that is electrically attracted to and deposits on the wound surface to form a mat or web of fiber providing a dressing covering the wound surface.

45. (Previously presented) A device to produce fiber particles, which device comprises a housing having a housing outlet and containing:
- a reservoir containing a liquid;
 - a supply tube coupled to the reservoir and having a liquid tube outlet registering with the housing outlet;
 - a voltage source for subjecting liquid issuing from the liquid tube outlet to an electric field to cause formation of an electrically charged liquid jet; and
 - a voltage pulsar for pulsing the voltage supplied by the voltage source to cause the liquid jet to break up into electrically charged fiber fragments or particles.
46. (Previously presented) A device according to claim 45, further comprising an electrical discharger for at least partially discharging the electrically charged matter.
47. (Previously presented) A method of providing a wound dressing, the method comprising:
- supplying liquid to an outlet in a vicinity of the wound to be dressed;

subjecting the liquid issuing from the outlet to an electric field to cause the liquid to form at least one jet of electrically charged liquid, the liquid being such that, after formation, the at least one jet forms a charged fiber which is attracted to an area and deposits on the area or breaks up into charged fiber fragments which are attracted to and deposit onto the area; and incorporating into the deposited mat or web cells that are configured to cause skin regrowth.

48. (Previously presented) A method of forming a dressing for a wound, the method comprising:
subjecting liquid to an electric field at an outlet in a vicinity of the wound thereby causing the liquid to form at last one jet of electrically charged liquid, the liquid being such that, after formation, the at least one jet forms a charged fiber that is attracted to said wound and deposits onto said wound or breaks up into charged fiber fragments that are attracted to deposit onto said wound so as to form a mat or web on said wound; and incorporating skin cells into said mat or web.
49. (Previously presented) A method of forming a dressing for a wound, the method comprising:
subjecting a liquid to an electric field at an outlet in a vicinity of the wound to cause the liquid to form at least one jet of electrically charged liquid, the liquid being such that, after formation, the at least one jet forms a charged fiber or charged fiber fragments which is/are attracted to and deposited onto said wound to form a layer on said wound, repeating the subjecting of the liquid to

form at least one further layer of fiber or fiber fragments on said layer and interspersing skin cells in or between said layers.

50. (Previously presented) A method of promoting or controlling tissue repair in a wound, the method comprising:

subjecting liquid issuing from an outlet to an electric field to cause the liquid to form at least one jet of electrically charged liquid and from the at least one jet at least one electrically charged fiber which, by virtue of its charge, is attracted to and deposits on the wound to form a mat or web; and incorporating into the mat or web cytokines for stimulating cytokinetic activity to promote cell activities to stimulate dendritic growth.

51. (Previously presented) A method of providing a tissue repair promoting dressing for a wound, the method comprising:

providing a hand holdable device comprising a housing adapted to be held in the user's hand and having a housing outlet and containing a reservoir containing liquid comprising a biologically compatible polymer and having a reservoir outlet, a liquid supply tube for receiving liquid from the reservoir outlet and having a supply tube outlet registered with the housing outlet, and a voltage source for applying a voltage to generate an electric field at the supply tube outlet, the method comprising:

positioning the housing outlet 5 to 10 cm away from the wound;

activating the voltage source to cause the liquid issuing from the supply tube outlet to form at least one electrically charged fiber having a diameter in the range of 10 nanometers to 10 micrometers which fiber, by

virtue of its charge, is attracted to and deposits onto the wound to form a mat or web with adjacent fiber portions being spaced apart by a gap; and

directing a spray containing an active ingredient comprising cytokines for promoting tissue repair onto the web or mat.

52. (Previously presented) A method of promoting or controlling tissue repair, the method comprising:

controlling a supply of liquid from an outlet and subjecting the liquid issuing from the outlet to an electric field to cause the liquid to form electrically charged fibers having a diameter in a region of 10 nanometers to 10 micrometers and having a charge-to-mass ratio such that the fibers are attracted to and deposit onto the wound to form a mat or web having a controlled pattern of fibers; and

incorporating into the mat or web an active ingredient that promotes tissue repair to reduce scarring or otherwise control the sequence of events essential to natural tissue repair.

53. (Previously presented) A method according to claim 52, which comprises incorporating the active ingredient into the mat or web by electrohydrogenatomically spraying a liquid comprising at least one tissue repair promoting active ingredient selected from a group consisting of cytokines that stimulate cytokinetic activity to promote cell activity and growth factors that include fibroblast growth factor, epithelial growth factor, transforming growth factor.

54. (Previously presented) A method according to claim 52, which comprises incorporating the active ingredient by providing the active ingredient within the liquid supply to the liquid outlet.
55. (Previously presented) A hand holdable device for enabling promotion of tissue repair, the device comprising a housing adapted to be held in a user's hand, the housing having a housing outlet, the housing containing:
- a reservoir containing liquid comprising a biologically compatible polymer and having a reservoir outlet;
 - a liquid supply tube for receiving liquid from the reservoir outlet and having a supply tube outlet registering with the housing outlet;
 - a voltage source for applying a voltage;
 - a spray device comprising a second reservoir containing liquid comprising an active ingredient and having an outlet for spraying liquid containing the active ingredient into the path of liquid issuing from the liquid supply tube; and
 - user operable switch means adapted to be activated by a user when the device is held in the user's hand to cause an electric field to be generated at the supply tube outlet to cause liquid from the reservoir to form at the housing outlet at least one electrically charged fiber and to cause liquid containing the active ingredient to be sprayed onto the fiber whereby, in use, the fiber is electrostatically attracted to and deposits onto the wound to form a mat or web incorporating the active ingredient sprayed by the spraying device.
56. (Previously presented) A method of promoting tissue repair, which method comprises generating electrostatically charged fibers by subjecting liquid containing a

biologically compatible polymer issuing from an outlet to an electric field and controlling the charge ration of the fiber thereby enabling a location at which the fibers are deposited on the wound to be controlled mainly by moving the liquid outlet relative to the wound and controlling a number of passes and pattern of movement of the outlet over the wound.

57. (Previously presented) A method of providing a fiber covering on a surface, the method comprising:

providing a reservoir of a polymer containing liquid to a liquid outlet via a supply tube; and
subjecting liquid issuing from the liquid outlet to an electric field while regulating a flow of liquid along the supply tube to the liquid outlet to cause the liquid to form at least one electrically charged jet which forms at least one electrically charged fiber that has a diameter controlled by the flow rate and which is electrically attracted to and deposits onto the surface.

58. (Previously presented) A method of supplying an active ingredient to an area of skin or soft tissue, the method comprising:

providing a polymer containing liquid comprising an active ingredient to an outlet directed towards said area; and
subjecting the liquid that issues from the outlet to an electric field to cause the liquid to form at least one electrically charged jet that breaks up to provide the charged fiber fragments that are electrically attracted to and stick onto said area of skin or soft tissue to supply the active ingredient beneath the skin or into the soft tissue.

59. (Previously presented) A method of providing a dressing on a surface, which method comprises:

providing a supply of liquid comprising a solvent and polymer to a liquid outlet;

subjecting liquid issuing from the liquid outlet to an electric field to produce at least one charged jet which, as the solvent evaporates, produces at least one electrically charged fiber or fibrils; and

changing a polarity of the electric field to change the polarity to which the at least one fiber or fibrils is/are charged to cause opposite polarity layers of fiber and/or fibrils to be deposited in succession onto the surface to form the dressing.

60. (Previously presented) A method of producing a fibrous layer covering on a surface, the method comprising:

supplying a polymer containing liquid outlet nozzle;

subjecting liquid issuing from the liquid outlet nozzle to an electric field while regulating the flow of the liquid to the liquid outlet nozzle such that liquid issuing from the liquid outlet nozzle forms a multitude of liquid jets each of which forms an electrically charged fiber or breaks up into fibrils or particles which are electronically attracted to and deposit onto the surface.

61. (Previously presented) A method of providing a dressing on a wound, which method comprises:

supplying a liquid comprising an electric polymer to a liquid outlet; and

subjecting liquid issuing from the liquid outlet to an electric field to generate at least one electrically charged jet which forms at least one of a fiber, fibrils or particles of the electric polymer which are attracted to and deposit onto the wound to provide nuclei or otherwise initiate interactive cellular and/or molecular events in tissue repair.

62. (Previously presented) A method of depositing material into a cavity or onto a concave surface, which method comprises:

supplying polymer containing liquid to a liquid outlet directed towards the cavity or concave surface;

subjecting liquid issuing from the liquid outlet to an electric field thereby causing the liquid to form at least one jet of electrically charged liquid which then forms electrically charged polymer matter comprising at least one of an electrically charged polymer fiber, electrically charged polymer fiber fragments or electrically charged polymer particles; and

at least partially electrically discharging the electrically charged polymer matter prior to supply to the cavity or onto the concave surface.

63. (Previously presented) A method of producing material for supply to the respiratory system of a mammal, which method comprises:

supplying a polymer containing liquid to a liquid outlet;

generating at the liquid outlet an electrical field to cause the polymer containing liquid to form at least one liquid jet which forms charged polymer matter comprising at least one of polymer fiber, fiber fragments and polymer particles; and

at least partially electrically discharging the electrically charged polymer matter prior to supply to the respiratory system.

64. (Previously presented) A method of forming a cavity wound dressing, which method comprises:

supplying a first liquid comprising thrombin to a first liquid outlet;
supplying a second liquid comprising fibrinogen to a second liquid outlet;
subjecting liquid issuing from the first and second liquid outlets to an electric field so as to generate liquid droplets of opposite polarity which rapidly coalesce causing the thrombin and fibrinogen to react together to form a fibrin mat in the wound cavity.

65. (Previously presented) A method of forming a dressing or covering on a surface, which method comprises:

supplying a polymer containing liquid to a liquid outlet directed towards the surface;
subjecting the liquid that issues from the liquid outlet to an electric field to generate at least one electrically charged liquid jet which then forms electrically charged polymer matter comprising at least one of electrically charged polymer fiber, electrically charged polymer fiber fragments and electrically charged polymer particles; and
spraying the electrically charged polymer matter with an oppositely charged spray or cloud.

66. (Previously presented) A method according to claim 65, which comprises spraying the polymer matter with an oppositely charged spray comprising a surfactant.
67. (Previously presented) A method of providing a dressing or covering on a surface, which method comprises:
- supplying a polymer containing liquid to a liquid outlet;
 - subjecting the polymer containing liquid that issues from the liquid outlet to an electric field while regulating a flow of liquid to the liquid outlet to cause the liquid to generate at least one electrically charged jet that partially solidifies to form electrically charged gel-like matter comprising at least one of electrically charged fiber, electrically charged fibrils and electrically charged particles which are electrically attracted to and deposit onto the surface.
- 68) (NEW) A method of providing a wound dressing, the method comprising:
- a) supplying liquid to at least one outlet;
 - b) subjecting liquid at an outlet to an electric field thereby causing the liquid to form at least one jet of electrically charged liquid, the liquid being such that after formation the at least one jet forms charged fibers which are attracted to and deposit onto a surface to form a mat.
- 69) (NEW) The method of claim 68 wherein the fibers comprise a bioresorbable inert polymer.

- 70) (NEW) The method of claim 69 wherein the polymer is selected from the group consisting of polyhydroxybutyric acid, polyvinyl alcohol, polyglycolic acid, polylactic acid and mixtures thereof.
- 71) (NEW) The method of claim 69 or 70 wherein the fibers further comprise at least one active component.
- 72) (NEW) The method of claim 71 wherein the active components are selected from the group consisting of analgesics, antiseptics, antibiotics, bactericides, antifungals, antiparasitics, anti-inflammatory agents, fibrinogen, vasodilators, proteolytic enzymes, cytokines, fibroblast growth factor (FGF), epithelial growth factor (EGF), thrombin, transforming growth factor (TGF), cells, peptides, polypeptides, insulin, immune suppressants, stimulants, vaccines, and mixtures thereof.
- 73) (NEW) The method of claim 72 wherein the active component is selected from thrombin, fibrinogen and mixtures thereof.
- 74) (NEW) The method of claim 68 wherein at least a portion of the fibers include collagen, and at least a portion of the fibers include at least one active component selected from thrombin, fibrinogen and mixtures thereof.
- 75) (NEW) The method of claim 73 wherein the bandage is adapted for application to a burn.
- 76) (NEW) The method of claim 68 wherein more than one layer of fibers is deposited to form the bandage.

- 77) (NEW) The method of claim 76 wherein skin cells are interspersed between fiber layers.
- 78) (NEW) The method of claim 71 wherein the active ingredients further comprise cytokines.
- 79) (NEW) The method of claim 68 wherein the fibers are coated with a surfactant.
- 80) (NEW) The method of claim 71 wherein different active components are provided in the different layers.
- 81) (NEW) A method of forming a hemostatic dressing, said method comprising electrohydrodynamically processing liquid comprising at least one active ingredient selected from fibrinogen, thrombin and mixtures thereof, to form a fibrous mat.
- 82) (NEW) The method of claim 81 wherein said liquid comprises at least one additional active ingredient selected from the group consisting of analgesics, antiseptics, antibiotics, bactericides, antifungals, antiparasitics, anti-inflammatory agents, vasodilators, proteolytic enzymes, cytokines, fibroblast growth factor (FGF), epithelial growth factor (EGF), transforming growth factor (TGF), cells, peptides, polypeptides, insulin, immune suppressants, stimulants, vaccines, and mixtures thereof.
- 83) (NEW) The method of claim 81 wherein the method further comprises electrohydrodynamically processing thrombin at one polarity so as to rapidly coalesce with droplets of opposite polarity comprising fibrinogen to form a fibrin mat.

- 84) (NEW) The method of claim 81 wherein at least a portion of the fibers include collagen, and at least a portion of the fibers include at least one active component selected from thrombin, fibrinogen and mixtures thereof.
- 85) (NEW) The method of claim 81 wherein the step of electrohydrodynamically processing comprises processing matter comprising thrombin at one polarity so as to rapidly coalesce with matter of opposite polarity comprising fibrinogen to form a fast-reacting fibrin mat.
- 86) (NEW) A wound dressing formed by supplying liquid to at least one outlet; subjecting liquid at an outlet to an electric field thereby causing the liquid to form at least one jet of electrically charged liquid, the liquid being such that after formation the at least one jet forms charged fibers which deposit onto a surface to form a mat; and the fibers comprise a bioresorbable inert polymer.
- 87) (NEW) The wound dressing of claim 86 wherein the fibers further comprise one or more active components.
- 88) (NEW) The wound dressing of claim 87 wherein the active components are selected from the group consisting of analgesics, antiseptics, antibiotics, bactericides, antifungals, antiparasitics, anti-inflammatory agents, fibrinogen, vasodilators, proteolytic enzymes, cytokines, fibroblast growth factor (FGF), epithelial growth factor (EGF), thrombin, transforming growth factor (TGF), cells, peptides, polypeptides, insulin, immune suppressants, stimulants, vaccines, and mixtures thereof.

- 89) (NEW) The wound dressing of claim 88 wherein the active components are selected from fibrinogen, thrombin, and mixtures thereof.
- 90) (NEW) The wound dressing of claim 86 wherein at least a portion of the fibers include collagen, and at least a portion of the fibers include at least one active component selected from thrombin, fibrinogen and mixtures thereof.
- 91) (NEW) The wound dressing of claim 86 wherein the polymer is selected from the group consisting of polyhydroxybutyric acid, polyvinyl alcohol, polyglycolic acid, polylactic acid, and mixtures thereof.
- 92) (NEW) The wound dressing of claim 86 wherein the dressing comprises more than one layer of fibers.
- 93) (NEW) The wound dressing of claim 92 wherein skin cells are interspersed between fiber layers.
- 94) (NEW) The wound dressing of claim 86 wherein the mat is formed by electrohydrodynamically processing thrombin at one polarity so as to rapidly coalesce with matter of opposite polarity comprising fibrinogen to form a fast-reacting fibrin mat.
- 95) (NEW) The wound dressing of claim 86 comprised of more than one layer.
- 96) (NEW) The wound dressing of claim 86 wherein cells are dispersed between the layers.

- 97) (NEW) A pre-formed, stable hemostatic dressing comprising fibers wherein the dressing is formed by subjecting to an electric field a liquid comprising an active ingredient selected from fibrinogen, thrombin, and mixtures thereof.
- 98) (NEW) The dressing of claim 97 wherein said liquid is processed by EHD processing.
- 99) (NEW) The dressing of claim 98 wherein the fibers comprise a bioresorbable polymer.
- 100) (NEW) The dressing of claim 99 wherein the polymer is selected from the group consisting of polyhydroxybutyric acid, polyvinyl alcohol, polyglycolic acid, polylactic acid, and mixtures thereof.
- 101) (NEW) The dressing of claim 99 wherein the fibers comprise an additional active ingredient selected from the group consisting of analgesics, antiseptics, antibiotics, bactericides, antifungals, antiparasitics, anti-inflammatory agents, vasodilators, proteolytic enzymes, cytokines, fibroblast growth factor (FGF), epithelial growth factor (EGF), transforming growth factor (TGF), cells, peptides, polypeptides, insulin, immune suppressants, stimulants, vaccines, and mixtures thereof.
- 102) (NEW) The dressing of claim 99 wherein said dressing is adapted for application to an external surface.
- 103) (NEW) The dressing of claim 99 wherein said dressing is adapted for application to an internal surface.